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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,207	11/22/2005	Vladimir Rafeev	07510.0213USWO	9972
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EXAMINER				
STALDER, MELISSA A				
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4162				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/534,207

**Applicant(s)**

RAFEV ET AL.

**Examiner**

MELISSA STALDER

**Art Unit**

4162

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)  
Paper No(s)/Mail Date 07-08-05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The following lack antecedent basis:

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites the limitations: "the first end", "the reactor", "the second end", "the zones of oxidizing and reduction"; "the oxidation", "the solid residue", "the product gas", "the movement", "the parts of the material". There is insufficient antecedent basis for these limitations in the claim.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 recites the limitations: "the first channel of these adjacent channels", "the material located between these channels", "the second channel". There is insufficient antecedent basis for these limitations in the claim.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 recites the limitation "the pallet" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 6 recites the limitations: , "the portions of the material", "the pallets", "the adjacent underlying pallet". There is insufficient antecedent basis for these limitations in the claim.

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what the limitation "above" is referring to in line 4 of this claim.

Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites the limitation "the gas-impermeable pallets" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the limitation "the gas-impermeable pallets" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claims 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 9 recites the limitation "the material" in line 2. Claim 10 recites the limitation "the article" in line 2. Claim 11 recites the limitation "the article in line 2. Claim 12 recites the limitations "the product gas" in line 2 and "the liquid products" in line 4. Claim 13 recites the limitation "the second end" in lines 2-3. Claim 14 recites the limitations "the first end of

the reactor"; "the supply of the material"; "the gasifying agent." Claim 14 recites the limitation "the material" in line 3. Claim 16 recites the limitation "the material" in lines 3 and 4. Claim 17 recites the limitations "the material" and "the platforms" in lines 2-3. Claim 18 recites the limitation "the pallets" in line 2. Claim 19 recites the limitation "the pallets" in line 2. Claim 20 recites the limitation "the tunnel furnace" in line 2. Claim 21 recites the limitation "the product gas" in lines 2-3. There is insufficient antecedent basis for these limitations in the claims.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 9-14, and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Manelis (WO 98/10224) in view of Sweed (US 4,101,287). Manelis teaches a method for treating waste material containing hydrocarbons where the material is supplied into a reactor where the gas containing oxygen is supplied to the reactor counter-currently to the supply of the waste material (pg. 4, lines 1-5). Therefore the middle part of the reactor is the reaction zone for combustion, oxidation, and reduction (pg. 3, lines 24-37). Manelis teaches that the gasifying agent oxidizes the waste material where the gasifying agent is already heated (pg. 5, lines 28-36). A solid residue and a product gas are produced. Additionally, carbon dioxide is produced (pg. 3, line 37) and liquid hydrocarbons (pg. 3, line 32). The gaseous products are

discharged from a point before the combustion zone in the streaming direction of the waste material (pg. 4, lines 5-12). Manelis also teaches that the waste material can be made into firebrick pieces prior to putting it in the reactor (col. 4, lines 21-32). The gasifying agent passes through a layer of hot solid residue (pg. 5, lines 29-35). Figure 1 of Manelis shows the direction of the waste and the gasifying agent through the reactor. Manelis teaches the method of processing the carbon based material in a shaft kiln (claim 3), which are typically of tubular shape like a channel but does not teach a channel the dimensions of the channel or the length of the channel. Sweed teaches a combined heat exchange reactor with parallel reactant channels (Figure 3) which can have a diameter of from 0.5 mm to 50 mm where the length of the channels can be from 10 mm up to several meters (col. 4, lines 50-65). These dimensions fully encompass a ratio of 1/100 for the transverse size of the channel to length of the channel. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Manelis with the dimensions of Sweed because Sweed teaches that the length of the channel should be in this range for handling reasons (col. 4, lines 49-55). Additionally, Sweed teaches that the diameter should be within this range because the size affects the heat transfer with regard to the neighboring channels (col. 4, line 65- col. 5, line 10). The heat transfer can affect the temperature of the reaction zone and consequently the reaction itself, therefore it would be obvious to use these optimal dimensions for the reactor.

Regarding claim 3, Manelis teaches pieces of material at 20 mm (pg. 5, line 2) and Sweed teaches a diameter of 0.5 to 50 mm. The cross-sectional area of a square is

height multiplied by width where the height and width are equal. Therefore, the range in the instant claims would be fully encompassed.

Regarding claim 4, Figure 3 of Sweed teaches the channels parallel to each other where the gasifying agent is only in contact with the material located in the channel.

Regarding claims 9-13 and 20-21, Manelis teaches at least one flow-through channel for the solid material where the product gas is withdrawn and separated from the hydrocarbon liquid. (pg. 10, lines 5-30). The combustion products are carbon dioxide and water in the second end of the reactor (pg. 3, line 34-37).

Claims 5-8 and 15-19, are rejected under 35 U.S.C. 103(a) as being unpatentable over Manelis (WO 98/10224) in view of Sweed (US 4,101,287) in view of Ohlsen (US 5,257,587). Manelis and Sweed teach the method of a solid carbon-containing material but do not teach loading the material on a pallet or the pallet. Ohlsen teaches a shelf that transports solid combustible waste material into a reactor. The shelf may be provided with grooves in order to improve the supply of combustion air (col. 3, lines 50-56). Although Ohlsen does not teach the use of rails and wheels, Ohlsen does teach a device that pushes the waste material along the shelf. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Manelis and Sweed with the teachings of Ohlsen because Ohlsen teaches that when the waste product introduced into the reactor contains solids, sometimes a conveyor or other special methods are needed to inject the waste sufficiently because a gas stream may not be enough (col. 1, lines 15-24).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA STALDER whose telephone number is (571)270-5832. The examiner can normally be reached on Monday-Friday, 8:00-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MS

/Jennifer McNeil/  
Supervisory Patent Examiner, Art Unit 4162